of Silver, or Tin, or Regulus of Antimony, in fuſion or amalgamed with a very little Mercury become white; which ſhews both that the particles of white metals have much more ſuperficies, and ſo are ſmaller, than thoſe of Gold and Copper, and alſo that they are ſo opake as not to ſuffer the particles of Gold or Copper to ſhine through them. Now it is ſcarce to be doubted, but that the Colours of Gold and Copper are of the ſecond or third order, and therefore the particles of white metals cannot be much bigger than is requiſite to make them reflect the white of the firſt order. The volatility of Mercury argues that they are not much bigger, nor may they be much leſs, leaſt they loſe their opacity, and become either tranſparent as they do when attenuated by vitrification, or by ſolution in menſtruums, or black as they do when ground ſmaller, by rubbing Silver, or Tin, or Lead, upon other ſubſtances to draw black Lines. The firſt and only Colour which white metals take by grinding their particles ſmaller is black, and therefore their white ought to be that which borders upon the black Spot in the center of the Rings of Colours, that is, the white of the firſt order. But if you would hence gather the bigneſs of metallic particles, you muſt allow for their denſity. For were Mercury tranſparent, its denſity is ſuch that the Sine of incidence upon it (by my computation) would be to the ſine of its refraction, as 71 to 20, or 7 to 2. And therefore the thickneſs of its particles, that they may exhibit the ſame Colours with thoſe of Bubbles of Water, ought to be leſs than the thickneſs of the Skin of thoſe Bubbles in the proportion of 2 to 7. Whence its poſſible that the particles of Mercury may be as little as

as the particles of ſome tranſparent and volatile fluids, and yet reflect the white of the firſt order.

Laſtly, for the production of *black*, the corpuſcles muſt be leſs than any of thoſe which exhibit Colours. For at all greater ſizes there is too much Light reflected to conſtitute this Colour. But if they be ſuppoſed a little leſs than is requiſite to reflect the white and very faint blue of the firſt order, they will, according to the 4th, 8th, 17th and 18th Obſervations, reflect ſo very little as to appear intenſly black, and yet may perhaps variouſly refract it to and fro within themſelves ſo long, until it happen to be ſtifled and loſt, by which means they will appear black in all poſitions of the Eye without any tranſparency. And from hence may be underſtood why Fire, and the more ſubtile diſſolver Putrefaction, by dividing the particles of ſubſtances, turn them to black, why ſmall quantities of black ſubſtances impart their Colour very freely and intenſly to other ſubſtances to which they are applied; the minute particles of theſe, by reaſon of their very great number, eaſily overſpreading the groſs particles of others; why Glaſs ground very elaborately with Sand on a copper Plate, 'till it be well poliſhed, makes the Sand, together with what is worn off from the Glaſs and Copper, become very black: why black ſubſtances do ſooneſt of all others become hot in the Sun's Light and burn, (which effect may proceed partly from the multitude of refractions in a little room, and partly from the eaſy commotion of ſo very ſmall corpuſcles;) and why blacks are uſually a little inclined to a bluiſh Colour. For that they are ſo may be ſeen by illuminating white Paper by Light reflected from black ſubſtances.